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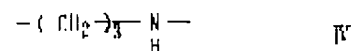
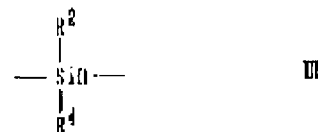
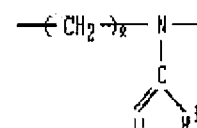
YOSHIMATSU AKIRA

(54) GEL COMPOSITION

(57)Abstract:

PURPOSE: To obtain a polyorganosiloxane gel composition which is useful for cosmetics, etc., readily rinsable and excellent in application feeling, stability, smoothness and lubricity by allowing an organopolysiloxane oil to gel under specific conditions.

CONSTITUTION: The organopolysiloxane gel composition is prepared by gelatinizing an organopolysiloxane with a graft copolymer from poly (N- acylalkyleneimine) chains of formula I (R1 is a 1 to 22 C alkyl, phenyl; x is 2, 3) and organopolysiloxane chains having the structural units of formulas II and III (R2, R3 are a 1 to 22 C alkyl, phenyl; R4 is formula IV).



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- 2.**** shows the word which can not be translated.
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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the cosmetics containing smooth nature, lubricity, the gel constituent of the silicone system which can wash out other cosmetics materials easily [can distribute stability for a long period of time, and] in a combination system while giving admiration in the least, and this, when it uses for cosmetics about the cosmetics containing a gel constituent and this at a detail.

[0002]

[Description of the Prior Art] Organopolysiloxane (silicone may be called below) is used very broadly [the silicone of various gestalten] as lubricant, a heat carrier, an electric insulator, a coating leveling agent, a release agent, a cosmetics additive, a fiber processing agent, impact shock absorbing material, a sealing material, templating material, a lustering agent, a foam stabilizer, and a defoaming agent from having many descriptions, such as low surface tension, outstanding lubricity, a mold-release characteristic and high thermal stability, a general very low glass transition point, and outstanding permeability.

[0003] Also in the field of cosmetics, not an exception but silicone is used abundantly as a feel improver etc. at a skin care agent, foundation, a hair shampoo, hair conditioner, etc.

[0004] When using silicone for cosmetics, in order to send effectively the feel which it was not sticky and was made smooth in the least, generally the shape of a chain and the annular silicone oil of viscosity of 50 or less centistokes is used in many cases.

[0005]

[Problem(s) to be Solved by the Invention] However, such silicone oil has the bad compatibility of other cosmetics components, and may carry out a slice depending on loadings. Furthermore, when fine particles, such as a pigment, are blended with silicone oil, precipitation may be produced from those specific gravity differences.

[0006] on the other hand, in order to avoid such a slice, silicone oil with high viscosity is used -- it was able to fly -- attaching -- admiration -- being generated -- silicone oil original -- **** [in admiration] in the least -- it divides and is not desirable.

[0007] In order to solve such a technical problem, in JP,63-152308,A, JP,1-190757,A, and JP,2-207354,A, the viscosity of a system was increased by kneading bridge formation polymerization silicone gel to hypoviscosity silicone oil, without spoiling the feel of silicone oil, and the approach of controlling a separation slice with other cosmetics raw materials was proposed. However, since each bridge formation polymerization silicone gel used in these invention was that in which three-dimension bridge formation is irreversibly carried out by covalent bond, when these were blended and used for cosmetics, its washing omission was bad and it had the fault that an unpleasant feeling of stickiness occurred by the bridge formation polymerization silicone gel which remained.

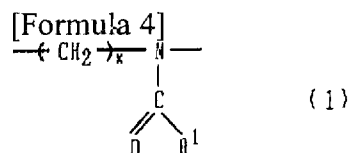
[0008] Therefore, the purpose of this invention gives a good feel and other components and compatibility of cosmetics are to offer the organopolysiloxane gel constituent which can be washed out often and easily.

[0009]

[Means for Solving the Problem] As a result of this invention persons' repeating research wholeheartedly in view of this actual condition, when using for cosmetics what gelled organopolysiloxane oil with the specific graft copolymer of an organopolysiloxane chain and the Pori (N-acyl alkylene imine) chain, the good feel was given, compatibility with other components was well stable, and header this invention was completed for the ability to consider as the cosmetics which can moreover be washed out easily.

[0010] That is, this invention is a degree type (1) about organopolysiloxane oil.

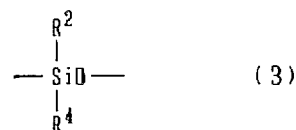
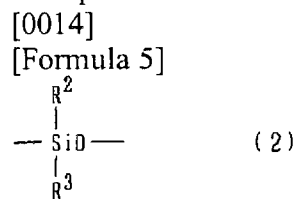
[0011]



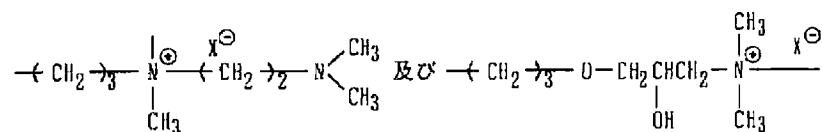
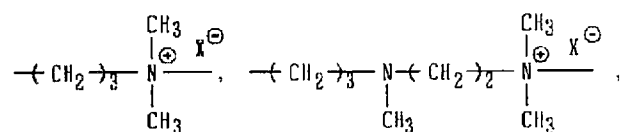
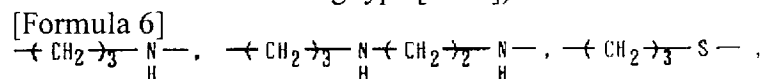
-- the inside of a formula and R1 are the same -- or it differs, the alkyl group or phenyl group of carbon numbers 1-22 is shown, and x shows the number of 2 or 3 --) -- the organopolysiloxane gel constituent which it comes to gel with the graft copolymer of the Pori (N-acyl alkylene imine) chain and organopolysiloxane chain with which it is expressed is offered. Moreover, this invention offers the cosmetics containing the organopolysiloxane gel constituent concerned.

[0012] The graft copolymer used for this invention has the desirable graft copolymer which uses an organopolysiloxane chain as a trunk and uses the Pori (N-acyl alkylene imine) chain as a branch, although any of an organopolysiloxane chain and the Pori (N-acyl alkylene imine) chain may be trunks.

[0013] As an organopolysiloxane chain in the graft copolymer concerned, they are a degree type (2) and a formula (3), for example.



[0015] (R2 and R3 are the same. or differing and the alkyl group or phenyl group of carbon numbers 1-22 shown among a formula. R4 the following type [0016])



(式中、X[⊖] は四級アンモニウム塩の対イオンを示す。)

[0017] the radical come out of and shown -- being shown -- what has the configuration unit expressed is desirable.

[0018] R2 in a formula (2) and (3) And R3 ***** -- although the alkyl group or phenyl group of carbon numbers 1-22 is mentioned, the saturation alkyl group of carbon numbers 1-22 is more desirable, the alkyl group of the carbon numbers 1-5, such as methyl, ethyl, n-propyl, isopropyl, n-butyl, and n-pentyl, is still more desirable, and especially a methyl group is desirable. Moreover, R2 And R3 More than inner 70 mol % is a methyl group, and what is the alkyl group or phenyl group of the straight chain of carbon numbers 2-20 or branched chain has the desirable remainder. In this case, R2 contained in the whole And R3 When the rate of being occupied by radicals other than the above methyl groups exceeds 30-mol % in inside, there is a case where the copolymer concerned with the Pori (N-acyl alkylene imine) chain will not dissolve with hypoviscosity silicone oil. Moreover, as for the molecular weight of this organopolysiloxane principal chain, 5000-500,000 are desirable, and 50,000-300,000 are desirable to a pan. In this case, the compatibility of the copolymer concerned which handling is difficult since the precursor silicone at the time of synthetic actuation when the gelation ability of the copolymer concerned will fall remarkably if molecular weight is too low, and molecular weight is too high

serves as hyperviscosity and poor solubility, and is moreover compounded, and hypoviscosity silicone oil also falls remarkably, neither of the cases stops functioning as a gelling agent, and it is not desirable.

[0019] 80 - 98% of the weight rate of the organopolysiloxane chain contained in the graft copolymer used for this invention is desirable. When the rate of an organopolysiloxane chain is lower than 80%, compatibility with hypoviscosity silicone oil becomes remarkably low, and the copolymer concerned stops showing sufficient gelation ability, when the rate of an organopolysiloxane chain is higher than 98%.

[0020] Moreover, the inside of the formula (1) showing the Pori (N-acyl alkylene imine) chain in a graft copolymer and R1 As an alkyl group of the carbon numbers 1-22 shown, the alkyl group of the carbon numbers 1-5, such as methyl, ethyl, n-propyl, isopropyl, n-butyl, and n-pentyl, is desirable.

[0021] Any of a homopolymer, a random copolymer, or a block copolymer are sufficient as the Pori (N-acyl alkylene imine) chain (1).

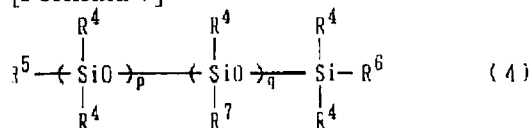
[0022] The molecular weight of the Pori (N-acyl alkylene imine) chain (1) has the desirable range of 300 to 3,000. When this molecular weight is smaller than 300, the gelation ability of the copolymer concerned with an organopolysiloxane chain will become very weak, and when larger than 3,000, the copolymer concerned with an organopolysiloxane chain will not dissolve with hypoviscosity silicone oil, and it does not function as a gelling agent.

[0023] In the connection approach of the above-mentioned Pori (N-acyl alkylene imine) chain and an organopolysiloxane chain The formation reaction of the ester by the condensation of a carboxyl group and a hydroxyl group, the formation reaction of the amide by the condensation of a carboxyl group and the amino group, Although much technique, such as an alkyl halide radical, the 1st class, the 2nd class or the 2nd class by the 3rd class amino group, the 3rd class or a formation reaction of the 4th class ammonium, an addition reaction to the vinyl group of a Si-H radical, and a beta-hydroxy amine formation reaction by the epoxy group and the amino group, can be used As indicated by JP,2-276824,A, JP,4-85334,A, JP,4-85335,A, JP,4-96933,A, etc. The method of making the denaturation organopolysiloxane which has nucleophilicity substituents, such as an amino group, react to a side chain is simple and effective in end reactivity Pori (N-acyl alkylene imine) obtained by carrying out cation ring opening polymerization of the annular imino ether.

[0024] Therefore, the graft copolymer used for this invention is the following formula (4).

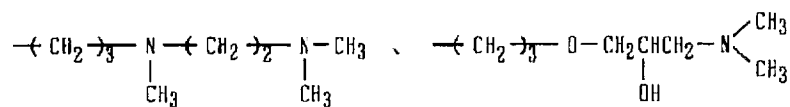
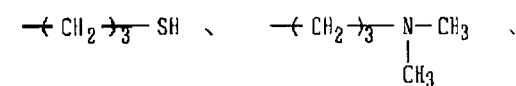
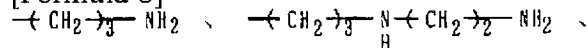
[0025]

[Formula 7]



[0026] (R4 is the same. or the inside of a formula, whether it differs, the saturation alkyl group or phenyl group of carbon numbers 1-22 is shown, and R5 and R6 show the respectively same radical as R4, the following formula [Or] [0027])

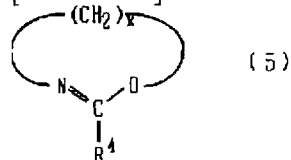
[Formula 8]



[0028] the radical come out of and expressed -- being shown -- R7 the radical expressed with the above-mentioned formula -- being shown -- p -- the integer of 100-4,000 -- being shown -- q -- the integer of 1-300 -- being shown -- the organopolysiloxane and the following general formula (5) which are expressed

[0029]

[Formula 9]



[0030] It is manufactured by making end reactivity Pori (N-acyl alkylene imine) obtained by carrying out ring opening polymerization of the annular imino ether expressed with (x show the number of 2 or 3 among a formula, and R4 is synonymous with the above) react.

[0031] As for end reactivity Pori (N-acyl alkylene imine) which is one of the raw materials, what has the repetitive construct unit expressed with said general formula (1) is desirable, and it can compound this thing by the ring opening polymerization of the annular imino ether (5) which makes an initiator methyl, ethyl, 2-propenyl, or benzyl ester of strong acid, such as the strong compound of electrophilic reaction nature, for example, benzenesulfonic acid, p-toluenesulfonic acid, trifluoro methansulfonic acid, trifluoroacetic acid, and a sulfuric acid, etc.

[0032] If for example, 2-permutation-2-oxazoline is used as annular imino ether (5), Pori (N-acyl ethyleneimine) (equivalent to the inside of a formula (1) and $x=2$) will be obtained, and if 2-permutation-2-oxazine is used, Pori (N-acyl propyleneimine) (equivalent to the inside of a formula (1) and $x=3$) will be obtained.

[0033] The reaction of organopolysiloxane (4) and end reactivity Pori (N-acyl alkylene imine) is performed over 5 - 12 hours under the inert atmosphere of nitrogen etc. at 60-80 degrees C. Acetic ester, such as the solvent which the both sides of Pori (N-acyl alkylene imine) and organopolysiloxane dissolve in homogeneity as a solvent in the process from the polymerization of the above annular imino ether to a reaction with organopolysiloxane, for example, ethyl acetate, isopropyl acetate, and butyl acetate; halogenated hydrocarbon, such as chloroform and 1,2-dichloroethane, etc. is used suitably.

[0034] The graft copolymer of the Pori (N-acyl alkylene imine) chain and organopolysiloxane chain which were compounded as mentioned above has the gestalt of the shape of the shape of ** rubber, and a hyperviscous paste.

[0035] What is necessary is to prepare a graft copolymer and the solution of silicone oil, and just to distill off a solvent, in order to manufacture the gel constituent of this invention using this graft copolymer. As a solvent used here, halogenated hydrocarbon, such as ketone solvent; dichloromethanes, such as lower alcohol; acetones, such as ethanol, 2-propanol, 1-butanol, and 2-butanol, and methyl isobutyl ketone, chloroform, 1,2-dichloroethane, and a dichlorobenzene, etc. is mentioned, for example. The solution of a graft copolymer is prepared first, subsequently this is more specifically mixed with this solvent solution of silicone oil, and if reduced pressure distilling off of this solvent is carried out, the gel of translucent transparent and colorless or white this invention can be prepared. If 97 or less % of the weight is desirable and exceeds 97 % of the weight among [all] a constituent, the content of the silicone oil at this time will not serve as gel without a fluidity, but will generate the mixture of the description near a hyperviscous solution. Moreover, as for silicone oil, it is desirable to use the thing of hypoviscosity in order to acquire a good feel. Thus, although it can extend thinly smoothly on the skin etc. with weak stress, since the generated silicone oil gel does not have a fluidity, it can be used for preparation of lasting high cosmetics.

[0036] As cosmetics of this invention, all pharmaceutical forms applicable to the skin and hair, for example, the cream for the skins, a milky lotion, the rinse for hair, a treatment, a mousse, a tonic, a set agent, hair spray, hair coloring, the Parma agent, the skin, the cleaning agent for hair, etc. are mentioned.

[0037] As other raw material components other than the water used for this invention, almost all components, such as the film formation nature polymer usually applied to cosmetics, a surfactant, a high molecular compound, oil, alcohols, various drug effect agents, antiseptics, and perfume, are mentioned, and from the inside, according to the purpose, an application, a pharmaceutical form, etc., it is chosen suitably and blended.

[0038] It can consider as the cosmetics which have the outstanding film property with good coat organization potency, holding the engine performance peculiar to silicone, such as smooth nature, gloss, and a dry feel, by using a film formation nature polymer together to the cosmetics of this invention. As a film formation nature polymer used for this invention, what is shown in following the (1) - (8) is mentioned.

[0039] (1) The ruby squalls K12, K30 (above BASF A.G. make), PVPK15, and K30 (above product made from GAF) etc. are mentioned as a polyvinyl-pyrrolidone system high molecular compound polyvinyl-pyrrolidone commercial item. They are the ruby squalls VA28 and VA73 (above BASF A.G. make) and PVP/VA as a polyvinyl pyrrolidone / a vinyl acetate copolymer commercial item. E-735, S-630 (above product made from GAF), etc. are mentioned. The ruby squall VAP 343 (BASF A.G. make) etc. is mentioned as a polyvinyl pyrrolidone / vinyl acetate / a propionic-acid vinyl ternary polymerization object commercial item.

Ruby flex time (BASF A.G. make), a copolymer 845,937,958 (above product made from GAF), etc. are mentioned as a polyvinyl pyrrolidone / an alkylamino acrylate copolymer commercial item.

The ruby flex time VBM35 (BASF A.G. make) etc. is mentioned as a polyvinyl pyrrolidone / an acrylate (meta) acrylic-acid copolymer commercial item.

Copolymer VC-713 (product made from GAF) etc. is mentioned as a polyvinyl pyrrolidone / alkylamino acrylate / a vinyl

caprolactam copolymer commercial item.

[0040] (2) Gun TORETTSU ES-225, ES-425, SP-215 (above product made from GAF), etc. are mentioned as the acid vinyl ether system high molecular compound methyl vinyl ether / a maleic-anhydride alkyl half ester copolymer commercial item.

[0041] (3) Resin 28-1310 (National starch company make), the ruby set CA 66 (BASF A.G. make), etc. are mentioned as acid polyvinyl acetate system high molecular compound vinyl acetate / a crotonic-acid copolymer commercial item.

Resin 28-2930 (National starch company make) etc. is mentioned as vinyl acetate / crotonic acid / a neo decanoic-acid vinyl copolymer commercial item.

The ruby set CAP (BASF A.G. make) etc. is mentioned as vinyl acetate / crotonic acid / a propionic-acid vinyl copolymer commercial item.

[0042] (4) Plus size L53P (Goo Chemical CO., LTD. make), a diamond hold (Mitsubishi Petrochemical Co., Ltd. make), etc. are mentioned as an acid acrylic high-molecular-compound (meta) acrylic acid / (meta) an acrylic ester copolymer commercial item.

The ultra hold 8 (BASF A.G. make), ANFOMA V-42 (National starch company make), etc. are mentioned as an acrylic acid / acrylic-acid alkyl ester / an alkyl acrylamide copolymer commercial item.

[0043] (5) There are both-sexes acrylic high molecular compound (meta) acrylic ethyl betaine / (meta) acrylic-acid alkyl ester copolymer, for example, N-METAKU roil ethyl-N, and N-dimethylanmonium, alpha-N-methyl carboxy betaine methacrylic-acid butyl, etc., and YUKAFOMA M-75, SM (above Mitsubishi Petrochemical Co., Ltd. make), etc. are mentioned as a commercial item.

There is acrylic-acid alkyl ester / methacrylic-acid butylamino ethyl / an acrylic-acid octyl amide copolymer, for example, octyl acrylamide / acrylate / butylamino ethyl methacrylate copolymer etc., and ANFOMA 28-4910 (National starch company make) etc. is mentioned as a commercial item.

[0044] (6) What is indicated by basic acrylic high-molecular-compound acrylamide acrylic ester system quarterpolymer JP,2-180911,A is mentioned.

[0045] (7) The cel coat H-100, L-200 (National starch company make), etc. are mentioned as a cellulosic cationic cellulosic commercial item.

[0046] (8) Quito Filamer (ICHIMARU PHARCOS CO., LTD. make) etc. is mentioned as a chitin chitosan derivative hydroxypropyl chitosan commercial item.

Carboxymethyl chitin carboxymethyl chitosan [0047] 0.05 - 20% of the loadings of the film formation nature polymer in the cosmetics of this invention are desirable, and are especially desirable. [0.1 - 10% of] As cosmetics which used the film formation nature polymer together, mascara, nail enamel, a hair set agent, etc. are mentioned.

[0048] As a surface active agent used for this invention, for example A straight chain or branching alkylbenzene sulfonates, The alkyl or the alkenyl ethereal sulfate salt which added ethyleneoxide and/or propylene oxide, An olefin sulfonate, an alkane sulfonate, saturation, or an unsaturated fatty acid salt, Alkyl or alkenyl ether carboxylate which added ethyleneoxide and/or propylene oxide, alpha-sulfo fatty-acid salt ester, an amino acid mold surfactant, a phosphoric ester system surfactant, A sulfo succinic-acid mold surface active agent, a sulfonic acid type amphoteric surface active agent, a betaine mold amphoteric surface active agent, An alkylamine oxide, a cationic surface active agent, polyoxy alkyl, or the alkenyl ether, The ether of the ester of the polyoxy alkylphenyl ether, a higher-fatty-acid alkanol amide or an alkylene oxide addition product, polyhydric alcohol, and a fatty acid, the ester of a sorbitol and a fatty acid, the ester of cane sugar and a fatty acid, higher alcohol, and sugar etc. is used. As for the loadings of the surfactant in the cosmetics of this invention, it is desirable to consider as 0.05 - 20% by other cosmetics 5 to 50% especially as a cleaning agent 0.01 to 60%.

[0049] In this invention, a cation-ized cellulosic, cationic starch, a cation-ized Cyamopsis Gum derivative, a carboxyvinyl polymer, xanthan gum, methyl cellulose, hydroxyethyl cellulose, etc. are mentioned as a high molecular compound used as a thickener and a feel improver. As for especially the loadings of these high molecular compounds in the cosmetics of this invention, considering as 0.1 - 10% is desirable 0.05 to 20%.

[0050] As oil, liquid fat, such as solid-state fat, such as higher alcohol, such as higher fatty acids, such as stearin acid, and cetanol, cholesterol, vaseline, cholesteryl isostearate, and sphingolipid, squalene, jojoba oil, and other silicone derivatives, etc. is mentioned. As alcohol, polyhydric alcohol, such as monohydric alcohol, such as ethanol, n-propanol, isopropanol, n-butanol, and benzyl alcohol, a glycerol, 1, 3-butylene glycol, propylene glycol, dipropylene glycol, a polyethylene glycol, and a sorbitol, is mentioned. As other components, the development matter for the reducing agent for a permanent wave, an oxidizer, and oxidation hair dye, The coupling matter, the acid dye for hair dye, basic dye, a pearl-ized agent, perfume, Germicides, such as coloring matter, a pigment, an ultraviolet ray absorbent, an anti-oxidant, triclosan, and TORIKURORO Calvin, anti-inflammatory agents, such as a glycyrrhizic acid potassium and tocopherol acetate, zinc

pilus thione, octopirox, etc. -- anti- -- a dandruff -- it is possible to add antiseptics, such as an agent, methylparaben, and butylparaben, etc. to arbitration in the range which does not spoil the effectiveness of this invention.

[0051] The cosmetics of this invention can be manufactured if mixing etc. carries out the above-mentioned component with a conventional method.

[0052]

[Effect of the Invention] When it uses for cosmetics, the gel constituent of this invention can give a good feel, can hold silicone oil to stability, and, moreover, can wash it out easily with the usual cleaning agent.

[0053]

[Example] Although an example is given and this invention is hereafter explained further to a detail, this invention is not limited to these. In addition, hereafter, the content of a silicone segment is the value calculated from the quantitative analysis of $^1\text{H-NMR}$ spectrum, and weight average molecular weight is the polystyrene equivalent weight average molecular weight calculated from the gel osmosis mold liquid chromatography which used chloroform as the expansion solvent.

[0054] It dissolved in 3.13g (0.0203 mols) of synthetic example 1 diethyl sulfate, and 104g of ethyl acetate which dehydrated 2-ethyl-2-oxazoline 48.8g (0.493 mols), and heating reflux was carried out for bottom 6 hours of nitrogen-gas-atmosphere mind, and end reactivity Pori (N-propionyl ethyleneimine) was compounded. 1st class aminopropyl denaturation poly dimethylsiloxane (molecular weight 110,000, amine equivalent 9,840) 200g [of a side chain] (it is made the amino group and is a 0.0203gmol) 50% ethyl-acetate solution was put in block here, and, in addition, heating reflux was carried out for 4 hours. Vacuum concentration of the reaction mixture was carried out, and the N-propionyl ethyleneimine-dimethylsiloxane copolymer was obtained as a colorless rubber-like solid-state (247g, 98% of yield). The content of a silicone segment was 81% and weight average molecular weight was 121,000.

[0055] It dissolved in 104g of ethyl acetate which dehydrated synthetic example disulfuric acid diethyl 3.13g (0.0203 mols) and 2-ethyl-2-oxazoline 48.8g (0.493 mols), and heating reflux was carried out for bottom 6 hours of nitrogen-gas-atmosphere mind, and end reactivity Pori (N-propionyl ethyleneimine) was compounded. 1st class aminopropyl denaturation poly dimethylsiloxane (molecular weight 280,000, amine equivalent 9,840) 200g [of a side chain] (it is made the amino group and is a 0.0203gmol) 50% ethyl-acetate solution was put in block here, and, in addition, heating reflux was carried out for 4 hours. Vacuum concentration of the reaction mixture was carried out, and the N-propionyl ethyleneimine-dimethylsiloxane copolymer was obtained as a colorless rubber-like solid-state (247g, 98% of yield). The content of a silicone segment was 81% and weight average molecular weight was 121,000.

[0056] It dissolved in 3.56g (0.0230 mols) of synthetic example 3 diethyl sulfate, and 60g of ethyl acetate which dehydrated 2-ethyl-2-oxazoline 27.5g (0.277 mols), and heating reflux was carried out for bottom 4 hours of nitrogen-gas-atmosphere mind, and end reactivity Pori (N-propionyl ethyleneimine) was compounded. 1st class aminopropyl denaturation poly dimethylsiloxane (molecular weight 110,000, amine equivalent 20,800) 400g [of a side chain] (it is made the amino group and is a 0.0192gmol) 50% ethyl-acetate solution was put in block here, and, in addition, heating reflux was carried out for 8 hours. Vacuum concentration of the reaction mixture was carried out, and the N-propionyl ethyleneimine-dimethylsiloxane copolymer was obtained as a white rubber-like solid-state (428g, 99% of yield). The content of a silicone segment was 92% and weight average molecular weight was 115,000.

[0057] 50g of 20% acetone solutions of the N-propionyl ethyleneimine-dimethylsiloxane copolymer obtained in the example 1 of example 1 composition -- 950g of 20% acetone solutions of chain-like poly dimethylsiloxane (viscosity 5cs) -- mixing -- this mixture -- the bottom of the pressure of about 1 mmHg, and about 50 degrees C -- condensing -- white -- translucent gel was obtained.

[0058] 50g of 20% acetone solutions of the N-propionyl ethyleneimine-dimethylsiloxane copolymer obtained in the example 2 of example 2 composition -- 950g of 20% acetone solutions of chain-like poly dimethylsiloxane (viscosity 5cs) -- mixing -- this mixture -- the bottom of the pressure of about 1 mmHg, and about 50 degrees C -- condensing -- white -- translucent gel was obtained.

[0059] 50g of 20% acetone solutions of the N-propionyl ethyleneimine-dimethylsiloxane copolymer obtained in the example 3 of example 3 composition was mixed with 950g of 20% acetone solutions of chain-like poly dimethylsiloxane (viscosity 5cs), this mixture was condensed at about 50 degrees C under the pressure of about 1 mmHg, and transparent and colorless gel was obtained.

[0060] 50g of 20% acetone solutions of the N-propionyl ethyleneimine-dimethylsiloxane copolymer obtained in the example 1 of example 4 composition was mixed with 950g of 20% acetone solutions of decamethyl cyclopentasiloxane, this mixture was condensed at about 50 degrees C under the pressure of about 1 mmHg, and translucent white gel was obtained.

[0061] The milky lotion for the skins was prepared with the conventional method by the following formulas using the

silicone-gel obtained in the example 5 example 4.

[0062]

[Table 1]

(% of the weight)

The gel of an example 4 10.0 Polyoxyethylene (60) hydrogenated castor oil 1.0 Glycerol 3.0 1, 3-butylene glycol 1.0 Ethanol 10.0 Butylparaben 0.1 Perfume 0.1 Water Balance [0063] The cream for the skins was prepared with the conventional method by the following formulas using the silicone gel obtained in the example 6 example 3.

[0064]

[Table 2]

(% of the weight)

The gel of an example 1 20.0 Cetanol 1.0 Cholesterol 1.0 Polyoxyethylene (60) hydrogenated castor oil 0.5 Monostearin acid sorbitan 1.0 Cetyl phosphoric acid 0.5 Butylparaben 0.1 perfume 0.1 Potassium hydroxide 0.1 Water Balance [0065] Silicone gel was prepared using the approach currently indicated by example of comparison 1 JP,63-152308,A. namely, trimethylsilyl end closure dimethyl methyl-hydrogen-polysiloxane (weight-average-molecular-weight 7,600 and number ratio of CH₃HSiO set pair (CH₃)₂SiO radical are 3 to 9.6) 200g -- 20g (a solvent is 30% water ethanol) of 1% potassium hydroxide solution -- in addition, crosslinking reaction was performed at 80 degrees C. Backwashing by water is carried out, reduced pressure drying of this product was carried out until the water layer became neutrality, and bridge formation silicone was obtained. 20g of this thing and chain-like poly dimethylsiloxane (viscosity 5cs) 80g were kneaded, and silicone gel was prepared. Thus, the milky lotion for the skins was prepared with the conventional method by the following formulas using the obtained silicone gel.

[0066]

[Table 3]

(% of the weight)

Silicone gel 10.0 Polyoxyethylene (60) hydrogenated castor oil 1.0 Glycerol 3.0 1, 3-butylene glycol 1.0 Ethanol 10.0 Butylparaben 0.1 Perfume 0.1 Water Balance [0067] The following approach estimated the washing omission of the cosmetics of the example of trial 1 above-mentioned examples 5 and 6, and the example 1 of a comparison. These results are shown in Table 4.

[0068] (The washing omission evaluation approach) The milky lotion or cream prepared in each example or the example of a comparison was applied to the back of optimum dose picking one hand, was fully lengthened, and was left for 20 minutes. Subsequently, 1% water solution of sodium dodecyl sulfate was taken in little another palm, as it put on the back of the hand of the spreading section, the palm was rubbed for about 1 minute, was united, and was washed, and it fully rinsed with tap water further. After wiping lightly with a towel, possible evaluation of the feel of the spreading section was carried out on the following criteria.

O : -- with [it is felt refreshed and] no feeling of a residual -- some [**:] -- xwith feeling of residual: -- [0069] in which adhesiveness remains clearly

[Table 4]

	実施例 5 の乳液	実施例 6 のクリーム	比較例 1 の乳液
洗い落ち	○	○	×

[Translation done.]

* NOTICES *

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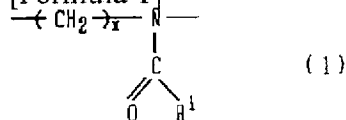
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] About organopolysiloxane oil, it is a degree type (1).

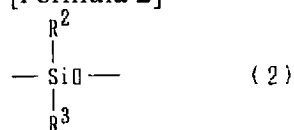
[Formula 1]



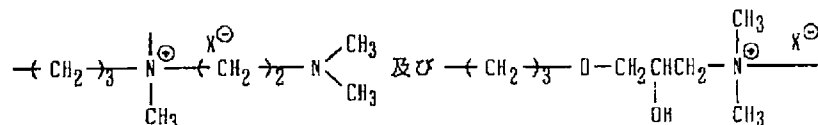
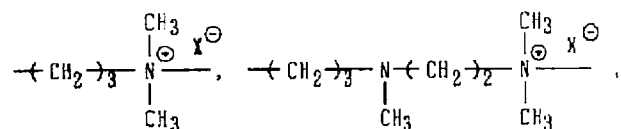
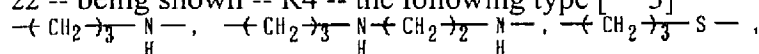
(-- the inside of a formula and R1 are the same -- or it differs, the alkyl group or phenyl group of carbon numbers 1-22 is shown, and x shows the number of 2 or 3 --) -- the organopolysiloxane gel constituent which it comes to gel with the graft copolymer of the Pori (N-acyl alkylene imine) chain and organopolysiloxane chain with which it is expressed.

[Claim 2] Degree type (2) The organopolysiloxane chain of a graft copolymer reaches (3).

[Formula 2]



the inside of a formula, R2, and R3 are the same -- or -- differing -- the alkyl group or phenyl group of carbon numbers 1-22 -- being shown -- R4 -- the following type [** 3]



(式中、X[⊖] は四級アンモニウム塩の対イオンを示す。)

the radical come out of and shown -- being shown -- the organopolysiloxane gel constituent according to claim 1 which is what has the configuration unit expressed.

[Claim 3] Cosmetics containing the gel constituent of organopolysiloxane according to claim 1 or 2.